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09/995,206	11/27/2001	Christopher L. Hill	STL10005	9541

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EXAMINER	
MILLER, PATRICK L	

ART UNIT	PAPER NUMBER
2837	

DATE MAILED: 01/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/995,206	HILL ET AL.	
	Examiner	Art Unit	
	Patrick Miller	2837	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 September 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *34-48 and 51-53* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *34-48 and 51-53* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 September 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *09172004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

1. Claims 34, 36, 38, 40, 47, and 51-53 are rejected under 35 U.S.C. 102(b) as being anticipated by Thomas (5,854,731).

   - With respect to claim 34, Thomas discloses an apparatus comprising a circuit that monitors a cumulative amount of charge associated with a power supply (Fig. 1, #8 monitors charge at #7), wherein power is removed from a load when the cumulative amount of charge is at least equal to a predetermined value (col. 3, ll. 19-25), and the predetermined value is selected to control an output characteristic of the power supply (col. 3, ll. 5-13; where the output characteristic is the heat generated by the current sent from the power supply).
   - With respect to claim 36, the driver is disabled when the amount of charge is at least equal to the predetermined value (Fig. 1, #3 disables drive current to #1 when compared charge from #7 is at least equal to the source value at #9).
   - With respect to claim 38, the resistor and capacitor form an integrative device (Fig. 1, #s 6 and 7).
   - With respect to claim 40, the circuit "trips" when excess current flows from the power source #2 to the electrical equipment, #1. This is interpreted as minimizing spikes from

the power supply because when a spike occurs, the current through the line is above a predetermined limit, and the output of #8 trips #3 (Fig. 1).

- With respect to claim 47, Thomas discloses a method comprising: monitoring a charge amount being removed from a power supply (Fig. 1, #8 monitors the amount of charged removed from #2); and decoupling the power supply from a load responsive to the charge amount being at least equal to a predetermined level selected to control an output characteristic of the power supply (col. 3, ll. 5-13, 19-25; where the output characteristic is the heat generated by the current sent from the power supply).
- With respect to claim 51, the power supply is decoupled from the load for a predetermined time (col. 3, ll. 22-35; where power is recoupled when the overload is removed).
- With respect to claim 52, the amount of charge being removed from the power supply is monitored by sensing an amount of current flowing through the load (Fig. 1, #4 senses the current flowing through the electrical equipment or load #1).
- With respect to claim 53, charge is accumulated in relation to the sensed amount of current flowing through the load (Fig. 1, charge at #7 is based on the sensed current flowing through the electrical equipment or load by #4).

2. Claims 34-41, 43-48, and 51 are rejected under 35 U.S.C. 102(b) as being anticipated by Falt et al (5,278,747).

- With respect to claim 34, Falt et al disclose an apparatus comprising a circuit that monitors a cumulative amount of charge associated with a power supply (Fig. 1, #33 monitors amount of charge between 'C' and 'R'), wherein power is removed from a load

when the cumulative amount of charge is at least equal to a predetermined value (col. 2, ll. 46-64), and the predetermined value is selected to control an output characteristic of the power supply (col. 4, ll. 35-48; high current drawn from the power supply by the load is the output characteristic).

- With respect to claims 35 and 39, the load is an inductive load, such as a motor (col. 4, ll. 64-65).
- With respect to claim 36, the output of the comparator, #33, makes the control device, #30, disable the drivers, #s 19-22 (Fig. 1).
- With respect to claim 37, the predetermined value is based on an amount of charge that will cause a spike when the amount of charge is removed from the power supply (cols. 4/5, ll. 66-68/102; where spikes typically occur at motor startup).
- With respect to claim 38, the capacitor, 'C' and the resistor, 'R' make up an integrating circuit (Fig. 1).
- With respect to claim 40, the system "disconnects" when excessive current or a spike is detected, i.e., when current is above a predetermined value, thus minimizing the "total" amount of excessive current or the spike on the power supply (col. 4, ll. 35-68).
- With respect to claim 41, Falt et al disclose a system comprising: a motor coupleable to a power supply (col. 4, ll. 61-66; the motor is connected to the power supply at lines #s 14 and 15 via the switches, #s 19-22); a sensor coupleable to the motor (Fig. 1, sensor includes 'C' and 'R,' and is coupled to the motor via lines #s 14 and 15 and the switches, #s 19-22); and a control circuit including an input and an output, the input coupleable to the sensor (Fig. 1, #s 33 and 30, where input from the sensor is from between 'C' and

'R'), wherein the control circuit provides an output signal on the output responsive to an amount of charge provided from a power supply that is at least equal to a predetermined threshold, where the predetermined threshold is selected to control an output characteristic of the power supply (col. 2, ll. 46-64; where the output characteristic is the high current drawn from the power supply by the load).

- With respect to claim 43, the control circuit includes a comparator coupled between the input and the output (Fig. 2, #33, input at #14).
- With respect to claim 44, the comparator is a one-shot type (Fig. 2, #47 of #33 produces one-shot pulse to #30 to disable motor drivers; col. 4, ll. 35-66).
- With respect to claim 45, motor drivers are coupleable to the motor and the output, and the drivers are responsive to the output signal (Fig. 1, #s 19-22 and are responsive to the output of #30).
- With respect to claim 46, the motor drivers are disabled in response to the amount of charge being at least equal to the predetermined threshold (col. 2, ll. 57-61).
- With respect to claim 47, Falt et al disclose a method comprising: monitoring a charge amount being removed from a power supply (Fig. 1, #33 monitors the amount of charge between 'C' and 'R,' which is the amount removed from the power supply, #10); and decoupling the power supply from a load responsive to the charge amount being at least equal to a predetermined level selected to control an output characteristic of the power supply (col. 2, ll. 46-64; where the output characteristic is the high current drawn from the power supply by the load).
- With respect to claim 48, the load is an inductive type (col. 4, ll. 64-65).

- With respect to claim 51, the power supply is decoupled from the load for a predetermined period of time (col. 4, ll. 46-68).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 35, 39, and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thomas (5,854,731) as applied to claims 34 and 47 above.

   - With respect to claims 35, 39, and 48, Thomas discloses the load as comprising "electrical equipment," but does not disclose the load being a motor or inductive, respectively.
   - The Examiner takes official notice that it would have been obvious to one having ordinary skill in the art at the time of the invention that the electrical equipment in Thomas could be a motor, which includes inductive loads. The motivation to implement a motor as the electrical equipment into the Thomas system would be to provide a circuit that protects the motor from excessive temperatures created by excessive currents.

4. Claims 41-43, 45, and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thomas (5,854,731).

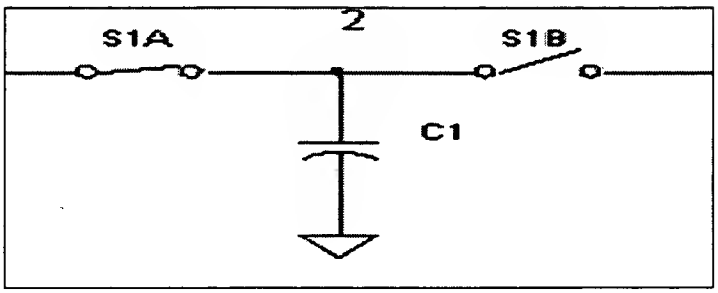
   - With respect to claim 41, Thomas discloses a system comprising: a load coupleable to a power supply (Fig. 1, #1 to #2); a sensor coupleable to the load (Fig. 1, #4 to #1 via #3); and a control circuit including an input and an output, the input coupleable to the sensor

(Fig. 1, #s 5-9 and 11), wherein the control circuit provides an output signal on the output responsive to an amount of charge provided from the power supply that is at least equal to a predetermined threshold, where the predetermined threshold is selected to control an output characteristic of the power supply (Fig. 1, output at #11 responsive to charge on #7, where the output characteristic is the heat generated by the current sent from the power supply).

- Thomas discloses the load as comprising "electrical equipment," but does not disclose the load being a motor or inductive, respectively.
- The Examiner takes official notice that it would have been obvious to one having ordinary skill in the art at the time of the invention that the electrical equipment in Thomas could be a motor, which includes inductive loads. The motivation to implement a motor as the electrical equipment into the Thomas system would be to provide a circuit that protects the motor from excessive temperatures created by excessive currents.
- With respect to claim 42, the resistor and capacitor comprise an integrating circuit (Fig. 1, #s 6 and 7).
- With respect to claim 43, the control circuit includes an integrator between the input and output (Fig. 1, #8 between input to #5 and output at #11).
- With respect to claim 45, the switch is interpreted to be a driver for the load, where it was obvious to one having ordinary skill in the art that the load could be a motor, and the switch is responsive to the output of the control circuit (Fig. 1, #3 responsive to #11).
- With respect to claim 46, the switch (driver) is disabled in response to the amount of charge being at least equal to the predetermined value (col. 3, ll. 19-25).

5. Claims 34-36, 38-43, 45-48, and 51-53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jo (5,666,066).

- With respect to claims 34, 41, and 47, Jo discloses a system that comprises a motor coupleable to a power supply (Fig. 1, 'M' to Vdc); a sensor coupleable to the motor (Fig. 1, #30); a control circuit including an input and an output (Fig. 1, input to #40 and output #10 at 'O'), where the control circuit provides an output signal by monitoring the amount of charge associated with a power supply or the amount of charge being removed from the power supply, wherein power is removed from a load when the cumulative amount of charge is at least equal to a predetermined value (Fig. 1, when the output of the integrator, #40 is greater than Vref2, #10 controls Q2 to open S2 and remove power to the motor, 'M'), and the predetermined value selected to control an output characteristic of the power supply (col. 3, ll. 42-46; where abrupt overcurrent is interpreted a voltage spike from the power supply is the output characteristic of the power supply).
- Jo does not disclose the integrator circuit utilizing the charge of the detected motor voltage. However, it would have been obvious to one having ordinary skill in the art at the time of the invention to replace the resistor, Rin, with a switched-capacitor circuit, which is the equivalent of the resistor (See Circuit 1 below). Therefore, when the capacitor of the switched-capacitor circuit charges to a predetermined level, this output is sent from #40 to #50 and based on the output of #50, the controller removes power to the motor via switch S2 (Fig. 1). The motivation to use a switched-capacitor is to provide the advantage of noise immunity.



Circuit 1 – Switched-Capacitor Circuit

- Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to replace the resistor, Rin, in Jo's system, with a switched-capacitor circuit, thereby making the sensed motor voltage charge the capacitor in the switched-capacitor system and comparing output of the switched-capacitor integrator with a predetermined value, and removing power to the motor when the amount of charge on the capacitor, and subsequently the output of the integrator is at least equal to Vref2. Implementing a switched-capacitor circuit provides the advantage of immunizing the system from noise.
- With respect to claims 35, 39, and 48, the load is a motor, which is an inductive load (Fig. 1, 'M').
- With respect to claims 36, 38, 42, 45, and 46, the drivers are disabled when the amount of charge is at least equal to a predetermined value, assuming a person of ordinary skill in the art has replaced the resistor, Rin, with a switched-capacitor to make a switched-capacitor integrator (Fig. 1, output of #40, as a switched-capacitor integrator causes output of #50 to make the #10 disable the driver, #20).
- With respect to claim 40, the circuit prevents overcurrents, thus minimizing spikes (col. 1, ll. 63-67; abrupt overload is interpreted as a spike).

- With respect to claim 43, the control circuit includes a comparator coupled between the input and output (Fig. 1, #50 between input to #40 and output 'O' of #10).
- With respect to claim 51, the power supply is decoupled from the load for a predetermined time (Fig. 2C, while the voltage is below Vref2).
- With respect to claim 52, the amount of current flowing through the load is sensed (Fig. 1, #30).
- With respect to claim 53, the charge on the capacitor of the switched-capacitor circuit is based on the amount of current flowing through the load (Fig. 1, output of #30 to the capacitor in the switched-capacitor integrator).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick Miller whose telephone number is 571-272-2070. The examiner can normally be reached on M-F, 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Martin can be reached on 571-272-2800 ext 41. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9318.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-3431.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Patrick Miller
Examiner
Art Unit 2837

pm
January 16, 2005

DAVID MARTIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800